VASIL'YEVA, G.Ya.

Magnetic fields and motion in the undisturbed photosphere.
Izv. GAO 23 no.5:28-39 '64. (MIRA 17:11)

L 26112-65 EWT(l,m)/EWG(v)/EEC(t)/EEC-4 Pe-5/Pq-4

ACCESSION NR: AT5003964 S/0023/64/023/005/0028/0039

AUTHOR: Vasil'yeva, G. Ya.

37
21
BT1

TITLE: Magnetic fields and motions in an undisturbed photosphere

SOURCE: Pulkovo. Glavnaya astronomicheskaya observatoriya. Izvestiya, v. 23, no. 5, 1964, 28-39

TOPIC TAGS: undisturbed photosphere, magnetograph, correlation method, structural function, autocorrelation function, magnetic field, exponential law, turbulence

ABSTRACT: In the summers of 1960 and 1961 investigations of an undisturbed photosphere were carried out with the solar magnetograph at the Main Astronomical Observatory. The Fe[illegible] line [illegible] was used, and data obtained were processed by the correlation method. [illegible] was used for eliminating errors in the correlation function. Six autocorrelation functions were proposed for the fluctuations of the radial velocities and three functions for the fluctuations of the magnetic field. The use of correlation functions facilitates the analysis of velocity fluctuations in the photosphere at various points. The Kolmogorov 2/3 exponential law for local turbulence was checked. An average structural function compiled from observation data showed a law of the first power

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L 26112-65

ACCESSION NR: AT5003864

instead of 2/3. A variable distribution of probabilities for the magnetic field was obtained. A compressed medium generates turbulence which is associated with energy emission in the form of sound. The quantity of sonic energy and the energy dissipated in turbulence compose a part of the general flux of energy in photospheric motions. The sonic energy generated by the turbulence and the magnetic field and, because of viscosity, the dissipated energy in turbulent matter form a small part of the general energy which flows from the photosphere to the chromosphere. Orig. art. has: 8 figures, 2 tables, and 21 formulas. [BG]

ASSOCIATION: none

SUBMITTED: 00	ENCL: 00	SUB CODE: AA
NO REF SOV: 030	OTHER: 04[illegible]	ATD PRESS: 31[illegible]

Card 2/2

VASIL'YEVA, G. YA.

PHASE I BOOK EXPLOITATION SOV/4867

Soveshchaniye po issledovaniyu mertsaniya zvezd, Moscow, 1958

Trudy Soveshchaniya po issledovaniyu mertsaniya zvezd, Moskva, 18-20 iyunya 1958 g. (Conference on the Study of Star Scintillation) Moscow, Izd-vo AN SSSR, 1959. Errata slip inserted. 1,000 copies printed.

Editorial Board: A. M. Obukhov, Corresponding Member, Academy of Sciences USSR; Resp. Ed.: O. A. Mel'nikov, Professor; I. G. Kolchinskiy, Candidate of Physical and Mathematical Sciences; N. I. Kucherov, Candidate of Physical and Mathematical Sciences; Secretaries of the Editorial Board: N. V. Bystrova, Candidate of Physical and Mathematical Sciences; M. A. Kallistratova and L. S. Zhukova; Tech. Ed.: M. E. Zendel'.

PURPOSE: This book is intended for astronomers. It may be of interest to physicists studying the atmosphere and designers of astronomical equipment.

COVERAGE: The book reports on the Transactions of the Conference on the Study of Stellar Scintillation, held in Moscow from 18 to 23 June 1958. The Conference was organized by the Astronomical Council AS USSR and the Institute of Physics of the Atmosphere AS USSR. The book contains summaries of 23 reports read at the Conference, treating stellar scintillation and flickering of star images. Individual reports deal with methods and instruments of observation. Included are brief summaries of the discussions which followed each session, and the resolution adopted by the Conference. References follow individual articles.

Card 7/9

ACCESSION NR: AP4007594 S/0214/63/000/004/0052/0058

AUTHOR: Vasil'yeva, G. Ya.

TITLE: Preliminary results of analysis of fluctuations in weak magnetic fields and radial velocities of undisturbed photosphere

SOURCE: Solnechnyye dannyye, no. 4, 1963, 52-58

TOPIC TAGS: solar magnetograph, magnetic field fluctuation, radial velocity, correlation method, autocorrelation velocity function, turbulent motion, inertial force, energy flux, statistical equilibrium, energy dissipation, solar atmosphere, structural function, spectral function, magnetic energy, kinetic energy, spectral density, photosphere

ABSTRACT: The fluctuations in magnetic field and radial velocity were investigated by two methods: correlational and spectral. The author found that the autocorrelation function of the magnetic field dies out more rapidly than the autocorrelation function of the radial velocity, a result that indicates smaller elements in the magnetic field. Correlation among velocities was found to exist for different elements of the gas, and this relationship is most characteristic of turbulent

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ACCESSION NR: AP4007594

movement. For a spectral function, the author used a Fourier transformation from correlation functions and compared the results with those obtained from an equation for spectral distribution taken from S. A. Kaplan (AZh, XXXII, 255, 1955). From this comparison she concludes that in the interval of the wave numbers she examined the magnetic energy proves to be less than the kinetic. This applies not only to small elements of the gaseous mass but to larger elements as well. The maximum distribution of both kinetic and magnetic energies lies in the region of $k = 10^{-4}$ (k = wave number). The magnetic energy maximum is shifted somewhat toward the short-wave end of the spectrum. "In conclusion, I express my gratitude to V. A. Krat, S. A. Kaplan, and B. M. Rubashev for their valuable suggestions relative to this work." Orig. art. has: 5 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 21Jan64 ENCL: 00

SUB CODE: AS NO REF SOV: 012 OTHER: 004

Card 2/2

S/214/62/000/002/002/002
I046/1246

AUTHOR: Vasil'yeva, G. Ya. and Vyal'shin, G. F.

TITLE: On the dependence of time variations of magnetic fields and radial velocities on the stability of active regions in the photosphere

PERIODICAL: Solnechnyye dannyye, no. 2, 1962, 58-66

TEXT: The longitudinal component of magnetic fields and radial velocities were determined for two groups of sun spots: July 15, 1961 $\varphi = -8°$, $l = +18°$ (No. 198 in "Solnechnyye dannyye"), and August 27, 1961 $\varphi = +15°$, $l = +20°$ (No. 243). Comparison of the magnetic-field maps with radial velocity distributions (scanned on four different occasions on July 15, and on two different occasions on August 27) shows that the magnetic field is not frozen into the gas at the photospheric level (compare S. Meyr, C. R., 251, No. 14, 1960; V. E. Stepanov, Izv. KrAO, XXV, 154, 1961). The authors show that the radial velocities in the photosphere are a more sensitive criterion than magnetic fields for the activity of spot groups, whereas the magnetic-field maps show no definite correlation in changes registered thereon. The accelerations in active regions (July 15) cluster around 0.04 m/sec^2 and in calm groups of spots (August 27) around 0.01 m/sec^2. There are 2 figures and 2 tables.

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S/035/60/000/010/012/021
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 10, p. 33, # 9990

AUTHORS: Demidova, A. N., Bronnikova, N. M., Vasil'yeva, G. Ya.

TITLE: Results of Observations of Star Scintillation at Anapa

PERIODICAL: Tr. Soveshchaniya po issled.mertsaniya zvezd, 1958, Moscow-Leningrad, AN SSSR, 1959, pp. 131-135. Discuss. 181-182

TEXT: Results of observations of star scintillation at Anapa during April to June 1957 are presented. The observations were carried out according to a unified program with the Pulkovo Observatory (with the similar equipment). The law of scintillation amplitude variation with star zenith distance is expressed by the formula: $M = M_o(\sec z)^{\alpha}$ where $0.7 \leq \alpha \leq 1.5$; $\alpha_{av} = 0.9$ (D = 200 mm). The scintillation amplitude of a star in zenith $M_{o\ av} = 52\%$. The correlation of scintillation amplitudes with the quality of diffraction images has shown that no dependence exists between these quantities. (Contrary results were obtained at Pulkovo). An increase of scintillation amplitudes is observed with a temperature increase at the Earth's surface.
Translator's note: This is the full translation of the original Russian abstract.
Card 1/1

VASIL'YEVA, G.Ya.

Distribution of radial velocities and brightness in the solar photosphere. Izv.GAO 22 no.4:39-44 '61. (MIRA 14:10)
(Sun)

84590

S/169/60/000/008/001/007
A005/A001

6.3000 (2801, 3201, 1035, 1106, 1114)

Translation from: Referativnyy zhurnal, Geofizika, 1960, No. 8, pp. 144-145, # 9501

AUTHOR: Vasil'yeva, G. Ya.

TITLE: Some Results From Studying Tremors in Star Traces

PERIODICAL: Tr. Soveshchaniya po issled. mertsaniya zvezd. 1958, Moscow-Leningrad AN SSSR, 1959, pp. 165-173. Diskus. 181-182

TEXT: By "tremor" of stars the random pulsations of the incidence angle of the light beam is meant, which are caused by the atmospheric turbulence (in distinction from "twinkling" which are random pulsations of the star brightness). The star trace recorded with considerable exposure on a fixed photoplate, deviates, in consequence of the tremor, from its mean position (characterizing the actual displacement on the sky of the star observed) by the magnitude $\xi(t)$ representing a random time function. The processing of the tremor data is reduced to the calculation of the main statistical characteristics of the $\xi(t)$-function: its dispersion $\sigma^2 = \overline{[\xi(t)]^2}$ (the upper line marks the averaging) and the correlation

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84590

Some Results From Studying Tremors in Star Traces

S/169/60/000/008/001/007
A005/A001

function B (τ) = $\overline{\xi(t)\,\xi(t+\tau)}$ or the Fourier transform of the B (τ)-function of the spectral density f (λ) (Kolchinskiy, I. G., Astron. zhurnal, 1957, No. 4). The results are presented of processing the data on the tremor of 13 various stars, which were obtained in 1957 by an expedition of the Main Astronomical Observatory of the AS USSR at Anapa by means of the reflecting-refracting telescope of the D. D. Maksutov АЗТ-7 (AZT-7)-type. The 13 traces observed were chosen in such a manner that stars with different zenith distances and at two azimuths (towards a sea and towards dry land) were represented among them. For each of these traces graphs are presented of the corresponding correlation function B(τ) in the range from $\tau = 0$ to $\tau \approx 5 - 8$ sec, which were obtained by computations with the electronic computer ЭВ80-3 (EV 80-3). According to the Kolchinskiy data, the B(τ)-functions do not, as a rule, tend to zero for $\tau \to \infty$ but they contain a component near the sine-shaped one. That indicates that $\xi(t)$ decomposes into a "purely random" component $\xi_1(t)$ and a "non-random" (periodic) component $\xi_2(t)$ having about 0.4 - 1.4 cps-frequency (the energy of the "non-random" component amounts to about 10 - 20% of the total process energy $\xi(t)$). For the correlation function $B_1(\tau)$ of the "random" component $\xi_1(t)$, the corresponding spectral density $f(\lambda)$ is also established. For this purpose, the function $B_1(\tau)$ is approximated by a function of the form $B_1(0)\, e^{-\alpha\tau} \cos\beta\tau$ and further, the

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Some Results From Studying Tremors in Star Traces

S/169/60/000/008/001/007
A005/A001

Fourier transform of this latter function is introduced as $f(\lambda)$. The results obtained are taken into a table containing the following parameter values for all the 13 traces: $B(0) = \sigma^2$; $B_1(0)$; $B_2(0) = B(0) - B_1(0)$; α; β, and T that is the period of the "non-random" component. The graphs of all spectral densities obtained are added. A conclusion is drawn with respect to the dependence of the statistical tremor characteristics on the zenith distance of azimuth and season.

L. V. Yerasova

Translator's note: This is the full translation of the original Russian abstract.

Card 3/3

VASIL'YEVA, I.

BARANSKIY,N.; BAKHMUTSKAYA,S.; VASIL'YEVA,I.; GEDEONOV,A.; KALININ,F.; KOTEL'NIKOV,V.; MIKHAILENKO,I.; MONAKHOVA,V.; MONAKHOVA,Ye.; MONIN,S. MOROSHKINA,O.; PASHKAICH,K.; PREOBRAZHENSKIY,A.; RAUSH,V.; SAUSHKIN, Yu.; TEREKHOV,P.; TISSMAN,N.; ERDELI,V.

In memory of A.A.Polovinkin. N.Baranskii and others. Geog.v shkole 18 no.5:70 S-O '55. (MLRA 8:12)
(Polovinkin, Aleksandr Aleksandrovich, 1887-1955)

VASIL'YEVA, I. A.

VASIL'YEVA, I. A. -- "Investigation of High-Frequency Electrical Parameters in a Seed of Grain." Sub 20 Jun 52, Moscow Inst of Mechanization and Electrification of Agriculture imeni V. M. Molotov. (Dissertation for the Degree of Candidate in Technical Sciences.)

SO: VECHERNAYA MOSKVA, January-December 1952

VASIL'YEVA, I. A., Cand Med Sci (diss) -- "Isoimmunization in pregnancy, and methods of weakening or eliminating it". Khar'kov, 1960. 14 pp (Khar'kov State Med Inst), 250 copies (KL, No 11, 1960, 137)

VASIL'YEVA, I.A.

Studies on the effect of the antihistamine citral in isosensitization in pregnancy [with summary in English]. Akush. i gin. 35 no.1:24-26 Ja-F '59. (MIRA 12:2)

1. Iz kafedry akusherstva i ginekologii (zav. - zasluzhenny deyatel' nauki USSR prof. I.I. Grishenko) lechebnogo fakul'teta Khar'kovskogo meditsinskogo instituta i otdela konservirovaniya krovi (zav. - prof. V.N. Krainskaya-Ignatova) Ukrainskogo instituta perelivaniya krovi i neotlozhnoy khirurgii.

(RH FACTORS,
iso-immun. in pregn., desensitization with citral (Rus))
(ANTIHISTAMINICS, ther. use,
citral, desensitization of Rh-isoimmun. in pregn. (Rus))
(ALDEHYDES, ther. use,
same)
(PREGNANCY, compl.
Rh-isoimmun., desensitization with citral (Rus))

BORISOV, V.I.; GOR, A.I.; NEVZOROV, A.M.; RYBINSKIY, D.A.; SOLOV'YEV, V.S.; EVART, G.V.; PROSVIRNIN, A.D., red.; VASIL'YEVA, I.A., red.; UVAROVA, A.F., tekhn. red.

[The M-21 "Volga" automobile; construction and maintenance] Avtomobil' M-21 "Volga"; konstruktsiia i tekhnicheskoe obsluzhivanie. [By] V.I.Borisov i dr. Pod red. A.D.Prosvirnina. Moskva, Mashgiz, 1962. 447 p. (MIRA 15:3)

1. Glavnyy konstruktor Gor'kovskogo avtomobil'nogo zavoda (for Prosvirnin).

(Automobiles)

VASIL'EVA, I. A. Cand. Tech. Sci.

Dissertation: "Pressure Pipeline with Artificial Permeable [illegible] ing and Soil Improvement Inst, 31 Jan 47.

SO: Vechernyaya Moskva, Jan, 1947 (Project #17836)

VASIL'YEVA, I. A.

26363 Vodoslivnaya plotina iz kamnya. Gidrotekhnika i melioratsiya 1949, No. 2, s. 34-39.

SO: LETOPIS' NO. 35, 1949

ALUKER, Sh.M.; VASIL'YEVA, I.A.; RASOVSKIY, E.I.; SKVORTSOV, P.F.

[General electrical engineering in illustrations and drawings] Elektrotekhnika v risunkakh i chertezhakh. Leningrad, Gos. energ.izd-vo. Pt.2. [Electric machines, apparatus and installations] Elektricheskie mashiny, apparaty i ustanovki. 1951. 1., diagrs. (in portfolio) (MIRA 13:2)
(Electric engineering)

RASOVSKIY, E.I.; ALUKER, Sh.M.; VASIL'YEVA, I.A.; KAMINSKIY, M.D. [deceased]; SKVORTSOV, P.F.; LOMONOSOV, V.Yu., prof., retsenzent

[General electrical engineering in illustrations and drawings] Obshchaia elektrotekhnika v risunkakh i chertezhakh. Izd.2., perer. Leningrad, Gos.energ.izd-vo. Pt.1. [Fundamentals of electric engineering] Osnovy elektrotekhniki. 1952. 13 p. (MIRA 13:2)

1. Kafedra osnov elektrotekhniki Moskovskogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva imeni V.M.Molotova (MIMESKh) (for all except Lomonosov).
(Electric engineering)

RASOVSKIY, YE. I. - ALUKER, SH. M. - VASIL'YEVA, I. A. - RASOVSKIY, YE. I. - SKVORTSOV, P. F. - LOMONOSOV, V. YU. -

VASIL'YEVA, I. A.

Electric engineering in sketches and drawings. Part I. Fundamentals of electric engineering; Part II. Electric machiner, apparatus and apparatus and appliances; Elektrichestvo no. 6, 1952

Monthly List of Russian Accessions Library of Congress, November 1952. UNCLASSIFIED.

VASIL'IEVA, I.A., kandidat tekhnicheskikh nauk.

Measuring the electrical parameters of wheat at high frequencies with the aid of a long line. Trudy MIMESKH 3:64-77 '56.
(Wheat--Testing) (Electric measurements) (MLRA 10:8)

ALUKER, Sh.M.; VASIL'YEVA, I.A.; ROSOVSKIY, E.I.; SKOVRTSOV, P.F.

[Electric engineering in sketches and charts] Elektrotekhnika v risunkakh i chertezhakh. Pod obshchey red. E.I.Rasovskogo. Izd. 2-oe, perer. i dop. Moskva, Gos. energ. izd-vo. Pt.2. [Electric motors, apparatus and equipment] Elektricheskie mashiny, apparaty i ustanovki. 1957. 7 p. and 147 tables (in portfolio) (MIRA 11:3)
(Electric machinery)

VASIL'YEVA, I.A., dotsent; KOBEK, S.I., dotsent; KORYUKIN, S.N., starshiy prepodavatel'; CHAVTORAYEV, A.I., dotsent; POPOV, K.V., prof., red.; KRZHIZHANOVSKAYA, G., red.; SMIRNOVA, Ye., tekhn.red.; PROKOF'YEVA, L., tekhn.red.

[Practical laboratory work in a course of the study of hydraulic structures] Laboratorno-prakticheskie zaniatiia po kursu gidrotekhnicheskikh sooruzhenii. Pod red. K.V.Popova. Moskva, Gos.-izd-vo sel'khoz.lit-ry, 1959. 143 p.

(MIRA 14:1)

(Hydraulic structures)

MOSKALEV, Leonid Aleksandrovich; VASIL'YEVA, I.A., kand.tekhn.nauk, nauchnyy red.; KONTSEVAYA, E.M., red.; PERSON, M.N., tekhn.red.

[Electrical engineering workbook] Zadachnik po elektrotekhnike. Izd.3., ispr.i dop. Moskva, Vses.uchebno-pedagog.izd-vo Trudrezervizdat, 1959. 180 p. (MIRA 12:10)
(Electric engineering)

VASIL'YEVA, I.A., red.; EL'KIND, V.D., tekhn. red.

[D-40R engine; operation manual] Dvigatel' D-40R; rukovodstvo po ekspluatatsii. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 111 p. (MIRA 11:10)

1. Stalingrad. Gubernskiy sovet narodnogo khozyaystva.
(Diesel engines)

GILELES, Lev Khatskelevich; KOKIN, Georgiy Mikhaylovich, prof.; MITIN, Boris Yefimovich; ROZHANSKIY, Vilen Anatol'yevich; VASIL'YEVA, I.A., red.; LEZHNEVA, Ye.I., red.; UVAROVA, A.F., tekhn.red.

[The MAZ-501 logging truck; construction, service, and repair] Avtomobil'-lesovoz MAZ-501; ustroistvo, obsluzhivanie i remont. Pod red. G.M.Kokina. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 362 p. (MIRA 12:5)
(Motortrucks--Maintenance and repair) (Lumbering--Machinery)

VASIL'YEVA, I. A.

RABINER, Yefim Grigor'yevich; AL'SHITS, I.Ya., retsenzent; VASIL'YEVA, I.A., red.; SOKOLOVA, T.F., tekhn.red.

[Assembly and operation of bearing units] Montazh i ekspluatatsiia podshipnikovykh uzlov. Izd.2. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 274 p. (MIRA 13:3)
(Bearings (Machinery))

REYKHRUDEL', Ye.M.; CHERNETSKIY, A.V.; MIKHNEVICH, V.V.; VASIL'YEVA, I.A.

Difficulties of a discharge in a magnetic field with a special configuration of the discharge gap. Zh. tekh. Fiz. 22, No.12, 1945-66 '52. (PA 56 no.669:6065 '53) (MLRA 6:2)

REYKHRUDEL', E.M.; CHERNETSKIY, A.V.; MIKHNEVICH, V.V.; VASIL'YEVA, I.A.

Mechanism of discharge in a magnetic ionized manometer. Vest.Mosk.un. 8 no.8:87-100 Ag '53. (MLRA 6:11)

1. Fizicheskiy fakul'tet.
(Electric discharges through gases) (Manometer)

S/109/60/005/009/018/026
E140/E455

26.1410
24.2120

AUTHORS: Vasil'yeva, I.A., Granovskiy, V.L. and Chernovolenko, A.F.

TITLE: New Data on the Influence of Magnetic Fields on the Ion Loss from Helium and Argon Plasmas

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.9, pp.1508-1515

TEXT: Previous work (Ref.10) concerned a stationary plasma in a straight cylindrical tube with dielectric walls (side and end) with helium at t = 0.03 to 1.1 mm Hg. The radial loss of electrons and ions in a homogeneous longitudinal magnetic field at currents less than 0.1 A was found to take place through ambipolar diffusion. In the range of magnetic fields up to B = 1300 g the transverse loss coefficient was given approximately by the Townsend formula (Ref.1,2). Two hypotheses have been advanced concerning the deviation from the Townsend formula observed in Ref.10 and in other works (Ref.3 to 7): 1. It is connected with the appearance of non-stationary processes in the plasma, for example local oscillations of turbulence. 2. It is caused by a "short circuit" of the plasma by sections of metal tubes walls

New Data on the Influence of Magnetic Fields on the Ion Loss from Helium and Argon Plasmas

perpendicular to the magnetic flux lines (Ref.8). The present work is a continuation of Ref.10, and a special experiment was carried out to check Simon's hypothesis (Ref.8). It was found that if the magnetic field did not act on the cathode region, the decrease of ion current from the centre to the wall of the tube and the ion loss coefficient with increase of magnetic field are monotonic. If the magnetic field acts on the cathode region, this relationship is valid only at currents less than 0.1 A. There is a close relationship between increase of noise and the formation of "anomalies" in the loss of ions at the tube walls. Variations of magnetic field change not only the amplitude but the spectrum of the noise. Not all oscillation arising in plasma can facilitate loss of ions to the side walls in the magnetic field. Moving stria, for example, have no influence. The types of oscillations leading to anomalies, the field distribution in them and their mechanism of affecting ion loss are open questions. The present results differ from Lehnert's in that maxima in the curves of longitudinal electric field vs. magnetic field have been obtained.

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E140/E455

New Data on the Influence of Magnetic Fields on the Ion Loss from Helium and Argon Plasmas

No evidence for Simon's effect up to $B/p = 5 \times 10^5$ g/mm Hg was obtained. At B_{crit} random oscillations (noise) arise in the plasma, which increases the rate of ion loss. B_{crit} increases with increase of pressure. In the presence of a magnetic field in the cathode region B_{crit} decreases with increase of current in the tube. There are 9 figures, 2 tables and 11 references, 7 Soviet and 4 English.

SUBMITTED: January 18, 1960.

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20423

S/109/60/005/012/021/035
E192/E382

24.2120 (1049, 1482, 1502, 1532)

AUTHOR: Vasil'yeva, I.A.

TITLE: Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol. 5, No. 12, pp. 2015 - 2025

TEXT: In 1939, Tonks (Ref. 1), while investigating the influence of the magnetic field B on the distribution n(z) of charge carriers in plasma, assumed that the boundary condition at the walls of the tube was:

$$n(a) = 0 \qquad (1)$$

where a is the radius of the tube. This condition led Tonks to the conclusion that a longitudinal uniform field does not cause contraction of the positive column. A more accurate boundary condition was derived by De Groot. A similar boundary condition in the absence of [illegible] was obtained

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

by Granovskiy (Ref. 2). It was shown by some authors (Refs. 3, 13) that the boundary condition proposed by Granovskiy could explain the contraction of the positive column in the presence of a uniform magnetic field. However, for numerical calculations of the transverse distribution of the ion concentration in the presence of B even the Granovskiy condition is not sufficiently accurate. It is necessary to determine the condition where the effect of the electric field E and magnetic field B on the movement of the charged particles in the vicinity of the walls is taken into account. For the purpose of analysis, it is assumed that the particles are not reflected from the walls. A layer of space charge exists in the vicinity of the walls. This is a layer of positive charges which neutralises the effect of plasma on the walls which are then negatively

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E192/E382

Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

charged. The velocity distribution of the particles can be assumed as being Maxwellian and the concentration $n(z)$ depends on the coordinate z only. The distribution function of the particles in the phase space is in the form:

$$f(z,c) = n(z)\left(\frac{m}{2\pi kT}\right)^{3/2} e^{-\frac{mc^2}{2kT}} = n(z)F(c) \qquad (3)$$

where

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$$F(c) = \left(\frac{m}{2\pi kT}\right)^{3/2} e^{-\frac{mc^2}{2kT}}$$

where m - mass of a particle,
c - is its velocity and
T - i its temperature.

It is also assumed that the average transit time τ of the particles is independent of their velocity; secondly, the ionisation and the volume recombination in the vicinity of the walls is neglected. A rectangular coordinate system is considered (Fig. 1). The origin of the coordinates is situated in the centre of the tube, the axis x is directed

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

along the tube and the axis z is directed towards the walls of the tube. An elementary area dS is considered at the boundary of the plasma (z = a). The total number of the particles entering dS during dt' is given by the following integral:

$$\int_{\vec{c}'}\int_{t=0}^{\infty}\frac{1}{\tau}f(z', c')\,d\vec{r}'d\vec{c}'dte^{-\frac{t}{\tau}} = dSdt'\int_{\vec{c}'}\int_{t=0}^{\infty}\frac{dt}{\tau}e^{-\frac{t}{\tau}}f(z', c')c_z d\vec{c}'. \qquad (4)$$

The function f(z', c') in the vicinity of z = a can be expressed as a Taylor series. This expression is valid if (z - a) is greater than the average distance δ between the particles. This condition can be written as:

$$\bar{\lambda} \gg \delta \qquad (7)$$

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

where $\bar{\lambda}$ is the average free path of the particle. If it is further assumed that:

$$\bar{\lambda}/a \ll 1 \qquad (8),$$

it is possible to take only the first two terms of the series for the function f(z', c'). The current passing through a unit area at the boundary of the plasma per unit time can therefore be expressed by:

$$j = \int_{\vec{i}} \int_{t=0}^{\infty} \frac{dt}{\tau} e^{-\frac{t}{\tau}} P(c') \left[n(a) + (z' - a) \frac{dn(a)}{dz} \right] c_z d\vec{c}'. \qquad (9)$$

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S/109/60/005/012/021/035
E192/E382

Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

where z' and c_z should be expressed by c'_z and c'_y, which are the velocity components. These components are expressed by:

$$c_z = c'_z \cos \omega t - \left(c'_y - \frac{eE_z}{m\omega}\right) \sin \omega t,$$

$$z = z' + \frac{1}{\omega}\left\{c'_z \sin \omega t - \left(c'_y - \frac{eE_z}{m\omega}\right)(1 - \cos \omega t)\right\}, \qquad (5)$$

where ω is the Larmor frequency of a particle,
e is its charge and
c_o is the velocity of light in vacuum. The final expression for the current passing through the boundary of plasma is therefore given by:

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

$$j = \frac{\left(\frac{kT}{2\pi m}\right)^{1/2} + \frac{eE_z\tau}{2m}}{1+\omega^2\tau^2} n(a) - \frac{dn(a)}{dz}\left\{\frac{kT}{2m}\tau\frac{1}{1+\omega^2\tau^2} + \frac{3\tau^2\frac{eE_z}{m}\left[\left(\frac{kT}{2\pi m}\right)^{1/2} + \frac{eE_z\tau}{2m}\right]}{(1+\omega^2\tau^2)(1+4\omega^2\tau^2)}\right\}. \quad (10)$$

This equation is valid provided the following condition is fulfilled:

$$\lambda \gg d \quad (11)$$

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

where d is the width of a layer which can be assumed as being equal to the Debye radius. This condition can also be written as:

$$\bar{\lambda} \gg \frac{150}{\sqrt{n}} \qquad (11') .$$

In general, Eq. (10) is applicable to electrons as well as positive ions, depending on the particles which are absorbed (not reflected) from the walls. If the plasma is stationary, the ion current flowing to the walls (as expressed by Eq. 10) should be equal to the current of ambipolar diffusion:

$$j = - D_a(B) \frac{dn(a)}{dz} \qquad (12) .$$

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

By comparing the righthand side parts of Eqs. (12) and (10) it is found that the ion concentration at the boundary of the plasma should satisfy the following equation:

$$n(a)\frac{\left(\frac{kT_p}{2\pi m_p}\right)^{1/2}+\frac{eE_z\tau_p}{2m_p}}{1+\omega_p^2\tau_p^2}+\frac{dn(a)}{dz}\left\{D_a(B)-\frac{\frac{kT_p}{2m_p}\tau_p}{1+\omega_p^2\tau_p^2}-\right.$$
$$\left.-\frac{3\tau_p^2\frac{eB_z}{m_p}\left[\left(\frac{kT_p}{2\pi m_p}\right)^{1/2}+\frac{eB_z\tau_p}{2m_p}\right]}{(1+\omega_p^2\tau_p^2)(1+4\omega_p^2\tau_p^2)}\right\}=0. \qquad (13)$$

This is the boundary-condition equation. However, in order

Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

to make it possible to use Eq. (13) in numerical calculations it is necessary to express E_z in terms of the concentration and its derivative; such an expression can easily be obtained from the Schottky diffusion theory. It can easily be shown that for $B = E_z = 0$, Eq. (13) is essentially identical with the Granovskiy expression. secondly, it is found that at high pressure Eq. (13) is identical with the Tonks condition. The use of the above boundary condition is illustrated by determining the distribution of the charge concentration along the radius of a cylindrical tube. It is assumed that the plasma in the tube is stationary and the diffusion is ambipolar. The diffusion equation for this case can be written as:

$$x \frac{d^2 J}{dx^2} + \frac{dJ}{dx} + xJ = \gamma x J^2 \qquad (19)$$

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Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

and its solution is in the form of a power series,

$$j = \sum_{k=0}^{\infty} a_k x^k \qquad (20) .$$

For $\gamma = \beta = 0$, Eq. (20) is in the form of the Bessel function of zero order. The formula was also used for calculating the distribution of the concentration in argon at pressures of 0.38 and 0.16 mm Hg; the values of T_e in the calculations were taken from probe measurements and T_p was assumed to be in the vicinity of 1 000 °K; the free paths $\bar{\lambda}_e$ and $\bar{\lambda}_p$ were taken from the available data. The results of the calculations are shown in two figures (see Fig. 2). The continuous curves in Fig. 2 show the calculated results, while circles and crosses give

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the experimental values. The measurements were carried out in a cylindrical glass tube having a radius of 1.5 cm. A cylindrical probe having a length of 5 mm and diameter of 0.2 mm could be moved across the tube. A large negative potential (50 - 100 V) was applied to the probe and the probe current was determined at various distances of the probe from the axis of the tube. From Fig. 2, it is seen that at p = 0.38 mm Hg, the experimental points coincide with the calculated curve. On the other hand, at the pressure of 0.16 mm Hg the effect of the field (of the order of 600 gauss) is more noticeable and the experimental points diverge from the calculated curve. However, it is interesting to observe that the concentrations near the boundary, whether calculated or determined experimentally, are almost identical. The author expresses his gratitude to V.L. Granovskiy for constant interest and useful advice. There are 3 figures and 16 references: 7 Soviet and 9 non-Soviet.

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S/109/60/005/012/021/035
E192/E382

Boundary Condition for the Concentration of the Charge Carriers in Plasma Situated in a Magnetic Field

Fig. 1:

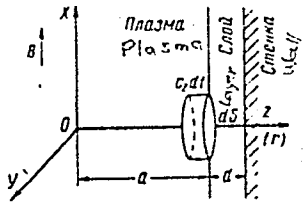

Рис. 1. Схема рассмотрения потока частиц через границу плазмы

Fig. 2:

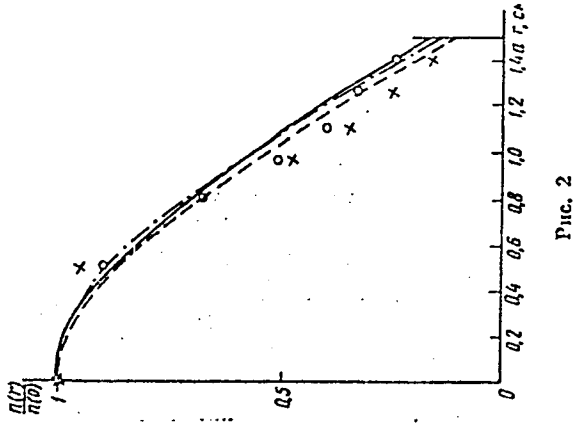

Рис. 2

SUBMITTED: May 19, 1960

Card 14/14

VASIL'YEVA, I. A., Cand. Phys-Math. Sci. (diss) "Effect of a Magnetic Field on Escape of Carriers of Charges from Plasma," Moscow, 1961, 22 pp. (All-Union Electric Engineering Institute im. V. I. Lenin) 150 copies (KL Supp, 12-61, 250).

L 15725-63 EPF(c)/EWT(l)/EWP(q)/EWT(m)/BDS/EEC(b)-2/ES(w)-2 AFFTC/ASD/ESD-3/AFWL/IJP(C)/SSD Pab-4/Pi-4/Po-4/Pr-4 JD

ACCESSION NR: AR3002664 S/0124/63/000/005/B016/B016

SOURCE: Rzh. Mekhanika, Abs. 5B80

AUTHOR: Vasil'yeva, I.A.; Granovskiy, V. L.

TITLE: New data on the influence of a magnetic field on ion drift from a plasma of inert gases

CITED SOURCE: Sb. Vopr. magnitn. gidrodinamiki i dinamiki plazmy. v. 2. Riga, AN LatvSSR, 1962, 403-409

TOPIC TAGS: ion drift, plasma, ion, drift, inert gas, magnetic field, striation, diffusion coefficient, wall probe

TRANSLATION: A study was made of the drift of ions from a plasma to the wall in the presence of a magnetic field. The drift of the ions from the plasma is characterized by an ion current density at the wall of the tube j. The diffusion coefficient is determined from the relation, $j = -D d\rho/dr$, where ρ is the density of charge of positive ions near the wall. The tube is made of glass, and contained an oxide cathode and a conical anode. The ion current at the wall

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ACCESSION NR: AR3002664

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is determined by a plane wall probe in the form of a disc. For the determination of the gradient of the density, an adjustable cylindrical probe was used. Helium and argon at pressures from $5 \cdot 10^{-3}$ to 1.1 mm mercury were studied. The field was varied from 0 to 2600 gauss, and the current in the tube from .03 to 1 amp.

The experiments showed that the diffusion of ions and electrons corresponds to the theory of pair collisions, and is antipolar, while the field is less than some critical B_c. The diffusion coefficient here monotonically falls with the growth of the field. For $B > B_c$ an anomaly is observed in the dependence D(B) and J(B) and B_c grows with the increase in pressure. In the anomalous region a current maximum appear and diffusion currents depending on the field. The anomaly is related to the appearance of the random electrical oscillations in the plasma. Striations do not show any effect on the process. The hypothetical effect of "short circuiting" of the plasma, introduced by Maiman to explain the large drift velocity of the ions perpendicular to the magnetic field is not observed. Yu.R.

DATE ACQ: 14Jun63 SUB CODE: PH ENCL: 00

Card 2/2

VASIL'YEVA, I.A., kand. tekhn. nauk, dotsent

Hydrotechnical calculations for conjugation structures. (MIRA 16:10)
Izv. TSKHA no.2:191-197 '63.

ACCESSION NR: AP4018390 S/0120/64/000/001/0190/0193

AUTHOR: Vasil'yeva, I. A.; Sofronov, P. A.

TITLE: Measuring the speed of hot-gas flow by photographing a spark mark

SOURCE: Pribory* i tekhnika eksperimenta, no. 1, 1964, 190-193

TOPIC TAGS: hot gas, hot gas flow, spark mark, SFR photorecorder, combustion chamber

ABSTRACT: A method for measuring the speed of a high-temperature gas flow is described. An electric spark excites the gas and forms a comet-shaped gas mark. The motion of the spark is recorded on a photofilm by mirror scanning. The method is suitable for recording the speed fields both along and across the hot gas stream. As the layout (see Enclosure 1) shows, the gas flow is upward and the spark gap is horizontal. The gas region optically excited by this spark is carried along in the gas flow. The image is scanned horizontally by a mirror so that the inclined trace of the luminous mark is formed on the photofilm. Then, the speed of the gas flow can be determined from the known scanning speed and

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ACCESSION NR: AP4018390

the enlargement. A Soviet-make SFR photorecorder was used in the experiments. It was estimated that the minimum measurable flow speed is 40 m/sec and the maximum speed is 25,000 m/sec. The error depends on the speed measured; at extreme speeds, the error is as high as 30%, in the middle it is 3% or less. Speeds from 280 to 880 m/sec were measured in the experiments at an estimated flow temperature of about 3,000C. "The authors are deeply thankful to V. L. Granovskiy for his constant attention and valuable advice. E. V. Py*senkov, B. N. Samodelov, and A. M. Kopy*lova took part in preparing and conducting the experiments, for which the authors wish to thank them." Orig. art. has: 5 figures, 1 formula, and 1 table.

ASSOCIATION: Vsesoyuzny*y elektrotekhnicheskiy institut (All-Union Electrotechnical Institute)

SUBMITTED: 04 Dec62	DATE ACQ: 18 Mar64	ENCL: 01
SUB CODE: PH, PR	NO REF SOV: 002	OTHER: 009

Card 2/2

L 12034-65 EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(b) Pr-4/Ps-4/Pu-4 ASD(p)-3/SSD/
ASD(f)-2/BSD/AEDC(a)/AEDC(b)/AFETR/AFWL/RAEM(c)/RAEM(a)/ESD(ge)/ESD(st)/ESD(t)
ACCESSION NR: AP4047370 JD S/0294/64/002/005/0672/0680

AUTHORS: Baranov, V. Yu.; Vasil'yeva, I. A.

TITLE: An electric arc in a stream of argon

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 5, 1964, 672-680

TOPIC TAGS: electric arc, plasma jet, magnetohydrodynamics/ Zorkiy 6 camera, SFR 1M motion picture camera, Schottky flow measurement

ABSTRACT: The external form and electrical properties of an arc in a stream of spectrally pure argon were studied at pressures of 0.1-60 mm Hg, flow rates 10^2 - 10^4 cm/sec, and arc currents 0.4 - 20 amp. These properties are of concern in producing high-temperature plasma jets and in the disruption of arcs by currents. These bear on the problem of energy conversion by the magnetohydrodynamic process. Figure 1 on the Enclosure shows the experimental setup. Plasma variables were measured at various points by the cylindrical probe (0.8 mm d., meter and 4 mm long). The argon flow, perpendicular to the test arc, was precisely controlled by the electromagnetic pump, the magnetic field of which was shielded from the test arc. Gas temperature was measured by a tungsten helix (5). The luminosity distribution of the arc was recorded by a "Zorkiy-6" camera, using 32 GOST film. A loop

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oscillograph registered the arc voltage, while the volt-ampere characteristics of the arc were taken in still and moving argon. The anode (8) motion made it possible to determine the electric field intensity. An SFR-1M motion picture camera measured the flow rate by spark marks. Below 10 mm Hg pressure the spark energy was insufficient, and the Schottky method of flow rate measurement was used (W. Schottky and J. Issendorf, Z. Phys., 13, 163, 1925). The gas pressure displaced the arc. The flow rate and the arc current had a significant effect on the external arc form and its position. The arc displacement grew monotonically with increased flow rates up to a certain critical speed v_c. The flow effect was caused by the interaction between the argon molecules and the transverse motion of the ions and electrons passing between electrodes. The electrons moved too quickly to be affected, but a part of the argon molecule motion was transferred to the ions, principally by the supercharge process. The process was complicated because the bent arc distorted the charge distribution, the flow was nonuniform through the tube cross section, and the passing gas was unevenly heated. The results break down into three groups: 1) with $v < v_c$ the arc in the stream is bent while remaining compact, and the bending increases with increased flow rates and gas pressures; 2) with $v \geqslant v_c$ the breakdowns of the moving gas along a span of the bent arc are caused by the growth of the electric field intensity between electrodes; 3) with $v \gg v_c$ the arc assumes a diffused appearance, caused by consecutive breakdowns, the

L 12034-65
ACCESSION NR: AP4047370

2

frequency of which grows with increased flow speeds. The authors thank Professor V. L. Granovskiy (deceased) for his interest. Orig. art. has: 8 figures and 1 table.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrical Engineering Institute)

SUBMITTED: 21Jun64 ENCL: 01

SUB CODE: EM, TD NO REF SOV: 006 OTHER: 006

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ACCESSION NR: AP4047370

ENCLOSURE: 02

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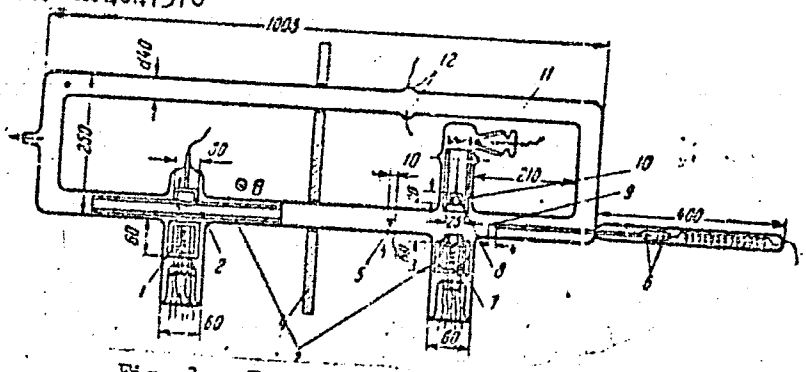

Fig. 1. Experimental tube

1 - pump arc oxide cathode; 2 - pump arc anode; 3 and 10 - quartz shields; 4 - iron shield; 5 - heated wire; 6 - armature; 7 - test arc oxide cathode; 8 - test arc anode; 9 - movable probe; 11 - glass sliding joint; 12 - electrodes for spark activation in the stream.

Card 4/4

VASIL'YEVA, I.A.; SOFRONOV, P.A.

Measuring the velocity of hot gas streams by means of photographing spark marks. Prib. i tekh. eksp. 9 no.1:190-193 Ja-F '64.
(MIRA 17:4)

1. Vsesoyuznyy elektrotekhnicheskiy institut.

ALUKER, Sh.M.; VASIL'YEVA, I.A.; RAZUMEEV, E.I.; SKVORTSOV, V.F.

[Electrical engineering in drawings and diagrams] Elektrotekhnika v risunkakh i chertezhakh. Izd. 3., perer. i dop. Moskva, Energiia. Pt.2. 1964. 7 p. (MIRA 18:1)

L 62139-65 EWT(l)/EWT(m)/EPF(n)-2/EWG(m)/EWI(v)/EPA(w)-2/T/EWI(t)/EWI(k)/EWI(b)/EWA(c) Pz-6/Po-4/Pf-4/Pi-4 IJP(c) JD/WW/RM/AT

ACCESSION NR: AP5010456 UR/0294/65/003/002/0173/0185 533.9.15:537.52:536.5

AUTHORS: Baranov, V. Yu.; Vasil'yeva, I. A.

TITLE: Investigation of a nonisothermal plasma of an arc in a stream of argon

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 2, 1965, 173-185

TOPIC TAGS: nonisothermal plasma, arc plasma, pressure effect, gas stream, probe measurement, electron temperature, electron density

ABSTRACT: This is a continuation of earlier work by the authors (Teplofizika vysokikh temperatur v. 2, 5, 1964). It is aimed at determining the influence of a gas stream on the nonequilibrium state of a plasma of a dc arc. A probe method was used to investigate the distribution of the concentrations n_e and the temperature T_e of the electrons along a stream of argon flowing through the dc arc. The temperature of the gas in the arc column and its vicinity was deter-

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ACCESSION NR: AP5010456 2

mined with an incandescent filament. The measurements were made at pressures from 0.15 to 100 mm Hg, arc currents from 1 to 5 A, and stream velocities from 10^2 to 5 x 10^3 cm/sec. Various factors governing the distribution of the electrons under the temperature are disclosed as a result of the investigation. It is shown in the conclusion that the procedure described makes it possible to investigate the disappearance of particles from an arc. 'The authors thank the late Professor V. L. Granovskiy for interesting and useful discussions.' Original article has: 7 figures, 6 formulas, and 3 tables

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute)

SUBMITTED: 19Sep64 ENCL: 00 SUB CODE: ME

NR REF SOV: 011 OTHER: 011

Card 2/2

V'SIL'YEVA, I. A.

Vasil'yeva, I. A.

"Thermodynamic and roentgenographic investigation of the reactions of reducing tungsten oxides and copper tungstates with hydrogen." Moscow Order of Lenin State U imeni M. V. Lomonosov. Moscow, 1956 (Dissertation for the degree of Candidate in Chemical Sciences)

Knizhnaya letopis'
No. 25, 1956. Moscow

GERASIMOV, Ya.I.; REZUKHINA, T.N.; SIMANOV, Yu.P.; VASIL'YEVA, I.A.; KURSHAKOVA, R.D.

Reduction of tungstates and molybdates by hydrogen and their thermodynamic properties. Vest. Mosk. un. Ser.mat.mekh.astron. fiz. khim. 12 no.4:185-200 '57. (MIRA 11:5)

1.Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Tungstates) (Molybdates) (Reduction, Chemical)

VASIL'YEVA, I. A.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 358

Author : I.A. Vasil'yeva, Ya.I. Gerasimov, Yu.P. Simanov.
Inst : -
Title : Equilibrium of Tungsten Oxides and Hydrogen.

Orig Pub : Zh. fiz. khimii, 1957, 31, No 3, 682-691

Abstract : The bibliographical data concerning the existence of two temperature modifications of WO_3 were confirmed experimentally. It was noted that the structure of intermediate W oxides forming at the reduction of WO_3 was determined by the structure of the initial preparation. A list of interplanar distances of $WO_{2.90}$, $WO_{2.72}$ and WO_2 produced at the reduction of the high-temperature modification of WO_3 II is given. It was made clear that the reduction of WO_3 II in the temperature range from 600 to 791° proceeded in four stages and that at temperatures below 584° it

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USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 358

proceeded in three stages, the intermediate oxide $WO_{2.72}$ disappearing. Based on the obtained experimental data, the following standard thermodynamical properties of WO_3 II were computed: ΔH^0_{298} = -205.3 kcal per mole, ΔZ^0_{298} = -186.2 kcal per mole, ΔS^0_{298} = -63.90 kcal per mole and S^0_{298} = -17.4 kcal per degree and mole.

Card 2/2

. Vasil'yeva, I.A.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7119.

Author : I.A. Vasil'yeva, Ya.I. Gerasimov, Yu.P. Simanov, T.N. Rezukhina.

Inst : Moscow State Univ

Title : Copper Tungstate - Hydrogen Equilibrium and Thermodynamic Characteristics of $CuWO_4$.

Orig Pub: Zh. fiz. khimii, 1957, 31, No 4, 825-831.

Abstract: The pressure of saturated $CuWO_4$ (I) vapors was measured by Knudsen effusion method (with a tantalum ampoule) in the range from 1098 to 1181°K. The obtained data comply with the equation log p (mm of merc. col.) = -2714.1/T + 0.2474. The evaporation heat of I is 12416 cal per mole. The I - hydrogen equilibrium was investigated by the circulation method in the

Card : 1/2 -6-

S/076/60/034/008/011/014
B015/B054

AUTHORS: Vasil'yeva, I. A., Gerasimov, Ya. I. and Simanov, Yu. P.
(Moscow)

TITLE: Thermodynamic Investigation of the Reduction Reaction of Tungsten Trioxide $WO_3(\alpha)$ With Hydrogen

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1811-1815

TEXT: In continuation of a previous paper (Ref. 1), the authors investigated thermodynamically the reduction reaction of α-WO_3 (instead of β-WO_3) by hydrogen with the use of the circulation method at temperatures between 640° and 937°C. The X-ray investigation of the modification α-WO_3 produced for the experiments was carried out by the powder method, and a structure described by Magneli et al. (Ref. 3) was found. The investigations of the equilibrium α-WO_3 + H_2 showed that the reduction proceeds in four steps; below 212°C, a direct reduction to W is possible without the formation of the intermediate products

Thermodynamic Investigation of the Reduction Reaction of Tungsten Trioxide $WO_3(\alpha)$ With Hydrogen

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$WO_{2.90}$, $WO_{2.72}$, and WO_2. From the measured equilibrium constants of the individual reduction stages (Table 1), the authors determined the equations $\log K_p = f(1/T)$ for each reaction step of α-WO_3 by the method of least squares. A comparison of the free energy for the complete reduction of α-WO_3 with that of β-WO_3 (Table 2) shows that the transition α-$WO_3 \longrightarrow \beta$-$WO_3$ takes place at a temperature of about 800°C. The dependence ΔZ°_T on temperature is given in Table 3, the values ΔZ° for the reaction $W + 3/2\ O_2 = \alpha$-WO_3 in Table 4. To calculate the thermodynamic quantities for α-WO_3, the authors used the method by M. I. Temkin and L. A. Shvartsman (Ref. 10), and obtained the following values: $\Delta H^\circ_{298} = -203.0$ kcal/mole, $\Delta Z^\circ_{298} = -184.7$ kcal/mole, $\Delta S^\circ_{298} = -61.6$ e.u., and $S^\circ_{298} = 20.0$ e.u. . A. V. Shashkina is mentioned in the paper. There are 1 figure, 4 tables, and 10 references: 4 Soviet and 6 US.

Card 2/3

Thermodynamic Investigation of the Reduction Reaction of Tungsten Trioxide WO_3 (α) With Hydrogen

S/076/60/034/008/011/014
B015/B054

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 25, 1958

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84672

S/020/60/134/006/015/031
B016/B067

5.4700 2209, 1360, 1018 only

AUTHORS: Gerasimov, Ya. I., Corresponding Member AS USSR, Vasil'yeva, I. A., Chusova, T. P., Geyderikh, V. A., and Timofeyeva, M. A.

TITLE: Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 6, pp. 1350-1352

TEXT: The authors point to the shortcomings in determining thermodynamic functions of the formation of tungsten oxides, and they suggest that another method be used irrespective of the values for water vapor. They chose the method of electromotive force (emf) (Refs. 3-6) which they modified to some degree. The authors carried out their experiments in the vacuum in a special metal cell which was insulated with molten quartz. The solid solution 0.85 ZrO_2 + 0.15 CaO served as electrolyte with anionic conductivity. The authors measured the emf of the cells of

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84672

Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

S/020/60/134/006/015/031
B016/B067

the type $WO_x \mid ZrO_2CaO \mid Fe_{0.95}O + Fe$ between 900 and 1230°K, with x - 2.719 (1); 2.66 (2); 2.39 (3); 1.90 (4); 1.69 (5), and 1.45 (6). The oxides of the mentioned composition were produced by reducing the low-temperature modification of WO_3-α (Ref. 2) by means of hydrogen. The first three compositions correspond to a mixture of the phases $WO_{2.72}$ and WO_2, the latter to the mixture WO_2 and W. The mixture $Fe_{0.95}O + Fe$ served as standard electrode. The experimental values of emf of the cells 1. - 3. and 4. - 6. are described by equation (1) and (2), respectively. The combination of the ΔG of the cells (1,2) which were calculated on the basis of a known equation with the ΔG of the formation of $Fe_{0.95}O$ from the elements (data by W. Lange, Ref. 7) yields the following equation for the reaction $1/2\,W + 1/2\,O_2 = 1/2\,WO_2$ (I).

$$\Delta G_1 = -68542 - 7.21\,T \log T + 1.26 \cdot 10^{-3}T^2 - 0.47 \cdot 10^5 T^{-1} + 40.62T$$

(943 - 1230°K).

The values of ΔG_1 between 973 and 1273°K calculated on the basis of this

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Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

S/020/60/134/006/015/031
B016/B067

equation, as well as the values $\Delta G_1^!$ for the reaction (I) for these temperatures which the authors obtained earlier from the equilibrium data (Ref. 2) are shown in Table 1. An equation (II) is introduced for the ΔG_2 of the reaction $100/72\ WO_2 + 1/2\ O_2 = 100/72\ WO_{2.72}$ (900 - 1173°K). The ΔG_2 values between 923 and 1173°K calculated therefrom are given in Table 2. A combination of reaction (I) and/or (II) gives a further equation for the reaction $W + 1.36\ O_2 = WO_{2.72}$ (III). To calculate the standard thermodynamical values, the authors used the thermal capacities of O_2 and of W (Ref. 8), while for WO_2 they used equation $c_p = 17.83 + 1.89 \cdot 10^{-3}T - 3.342 \cdot 10^5 T^{-2}$. The latter was derived on the basis of the value $c_{p\ 298}$ for WO_2 (Ref. 9), of the c_p values for solids at the conversion temperature and the average values for oxides UO_2, VO_2, and ThO_2. Using these values for the reaction $W + O_2 = WO_2$ (IV),

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Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

S/020/60/134/006/015/031
B016/B067

the authors obtain the equation for ΔG_T:
$\Delta G_T = -136.6 - T(4.66M_0 + 0.21M_1 - 2.44M_{-2}) + 41.7T$. ($M_0$, M_1, M_{-2} are the coefficients of the equation of M. I. Temkin-L. A. Shvartsman, Ref. 12). It follows therefrom: $\Delta H^o_{298} = -136.6 \pm 2$ kcal; $\Delta S^o_{298} = -41.7 \pm 1.5$ e.u.; $\Delta G^o_{298} = -124 \pm 2$ kcal. By using the value of S^o_{298} for W the authors obtain: $S^o_{298} = 15.0 \pm 1.5$ e.u. For the purpose of comparison Table 3 shows some publication data for the thermodynamic functions of the formation of WO_2 from elements under standard conditions.

There are 3 tables and 17 references: 5 Soviet, 7 US, 2 French, and 3 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 3, 1960

36923
S/020/62/143/005/011/018
B145/B138

5.4800

AUTHORS: Ksenofontova, R. F., Vasil'yeva, I. A., and Gerasimov, Ya. I., Corresponding Member AS USSR

TITLE: Thermodynamics of tungsten oxides of variable composition

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962, 1105-1107

TEXT: The thermodynamic formation function of the WO_x oxides (x = 2.702 - 2.976) was determined by means of emf measurements. The method has been described previously (ZhFKh, 36, no. 1 (1962)). The emf of cells of the type Mo, WO_x/0.85 $ZrO_2$0.15 CaO (mole fraction)/Fe, $Fe_{0.947}O$,Mo was measured in the range 900 - 1100°K (Mo molybdenum- or platinum shunts). The ZrO_2 - CaO electrolyte is a pure anion conductor between 600 - 1100°. The temperature dependence of ΔG_{II} ($=\Delta\bar{G}_{O_2}$) of the reaction: $2/\delta\ WO_{x+\delta} = 2/\delta\ WO_x + O_2$ (II) was determined from the temperature dependence of the measured emf, using equation $\Delta G_{III} = -63570 - 16.06T$ for the reaction:

Card 1/3

Thermodynamics of tungsten...

0.947 Fe + 1/2 O_2 = $Fe_{0.947}O$ (III) (H. Peters, H. H. Möbius, Zs. phys. Chem., 209, no. 6, 298 (1958)). Iron oxide as well as tungsten oxides were obtained by reduction of iron sesquioxide and the high-temperature modification of WO_3. The temperature was controlled with an accuracy of $\pm$ 0.5°. The pressure was 10^{-4} to 10^{-5} mm Hg. Results are shown in Table 1. The course of the isotherms in the W/O - ($-\lg P_{O_2}$) diagram ($-\lg P_{O_2}$ was obtained from equation $\Delta\bar{G}_{O_2} = -RT\ln P_{O_2}$) shows that in the range x = 2.89 - 2.72, a two-phase range exists at 850 - 900°K, which diminishes with rising temperature finally passing into a singlephase range above 1000°K. Identical, nonstoichiometric phases exist in the ranges x = 2.97 - 2.89 and x = 2.75 - 2.70. Vacancy formation in the cation lattice owing to completion of the O - lattice is assumed to be the mechanism of O_2 absorption by the crystal lattice of the lower oxide. Below critical temperature ($\sim$ 1000°K), when the concentration of cation vacancies exceeds saturation, the crystal lattice forms two phases. Another possibility is that the oxygen of the

Card 2/3

Thermodynamics of tungsten...

gas phase oxidizes the W^{4+} to W^{6+}, with the development of intermediate oxygen ions. There are 1 table and 2 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: December 9, 1961

Legend to Table 1: (1) mv, (2) cal/mole.

x	$E = a + bT \pm 0{,}5-1$. (1) мв	$\Delta\bar{G}_{O_2} = a + bT$, (2) кал/моль
2,702	$-11{,}88 \pm 0{,}0577\ T$	$128\,236 - 37{,}44\ T$
2,719*	$6{,}68 \pm 0{,}045\ T$	$126\,520 - 36{,}27\ T$
2,750	$+33{,}20 \pm 0{,}0286\ T$	$124\,080 - 34{,}76\ T$
2,877	$-102{,}80 \pm 0{,}2025\ T$	$136\,630 - 50{,}80\ T$
2,905	$-0{,}66 \pm 0{,}1100\ T$	$127\,200 - 42{,}27\ T$
2,915	$-25{,}63 \pm 0{,}1550\ T$	$129\,510 - 46{,}42\ T$
2,920	$+86{,}76 \pm 0{,}935\ T$	$119\,140 - 40{,}75\ T$
2,945	$+58{,}12 \pm 0{,}1579\ T$	$124\,780 - 46{,}69\ T$
2,950	$+15{,}01 \pm 0{,}1698\ T$	$125\,760 - 47{,}79\ T$
2,976	$-332{,}18 \pm 0{,}6389\ T$	$157\,790 - 91{,}07\ T$

Card 3/3

SUNDARESEN, M.; GERASIMOV, Ya.I.; GEYDERIKH, V.A.; VASIL'YEVA, I.A.

Study of the thermodynamic properties of iron-platinum alloys by the method of electromotive forces. Zhur. fiz. khim. 37 no.11:2462-2466 N'63. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 1648-66 EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/T/EWP(t)/EWP(b) IJP(c) JD/AN/JG

ACCESSION NR: AP5021428 UR/0076/65/039/008/2080/2081
541.11

AUTHOR: Vecher, A. A.; Vecher, R. A.; Geyderikh, V. A.; Vasil'yeva, I. A.

TITLE: Nature of the conductivity of the solid electrolyte 0.85 ThO_2 + 0.15 La_2O_3

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 8, 1965, 2080-2081

TOPIC TAGS: thorium oxide, lanthanum oxide, electric conductivity, galvanic cell, transference number

ABSTRACT: Derivation of the equation for the average ion transference number

$$\bar{t}_{ion} = \frac{E}{E_0}$$

shows that if the thermodynamic data for a reaction occurring in a cell are known, this equation can be used to calculate the average ion transference number for an electrolyte for certain given electrodes. The emf of the cell

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L 1648-66

ACCESSION NR: AP5021428

was measured at 1000°K and found to be 300 ± 20 mV. The thermodynamic emf E_0, calculated from data for FeO and SiO_2, is equal to 797 ± 20 mV. Hence, t_{ion} = 0.38 ± 0.03 for the electrolyte $0.85ThO_2 + 0.15La_2O_3$ with the electrodes Si, SiO_2 ($p_{O_2} \approx 10^{-37}$ atm) and Fe, FeO ($p \approx 10^{-21}$ atm), which is close to the value reported in the literature for the electrolyte $0.85ZrO_2 + 0.15CaO$ for approximately the same conditions. It is concluded that thermodynamic quantities for SiO_2 cannot be obtained by the emf method with a solid electrolyte having oxygen conductivity because an appreciable electronic conductivity arises in the electrolyte, and the galvanic cell ceases to be reversible. Orig. art. has: 4 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 06Mar65 ENCL: 01 SUB CODE: GC

NO REF SOV: 001 OTHER: 004

Card 2/2 LP

L 30404-66

ACC NR: AP6005... UR/0076/66/040/002/0480/0481

AUTHOR: Vasil'yeva, ... D.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Thermodynamics of the Ca - W - O system

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 2, 1966, 480-481

TOPIC TAGS: calcium compound, tungstate, thermodynamic function, equilibrium constant, chemical reduction, hydrogen, oxygen, x ray analysis

ABSTRACT: The reduction of $CaWO_4$ with hydrogen was investigated by using the circulation method of studying heterogeneous equilibria, and the products were analyzed by x-ray phase analysis. The reduction process at 950 - 1170C was found to take place in three stages. The first stage is characterized by a slight decrease of the equilibrium constant with a decrease in oxygen content, apparently within the confines of the region of homogeneity of $CaWO_4$; the boundaries of this region expand somewhat with rising temperature. The second stage is characterized by the fact that the K_p values are independent of the composition up to $CaWO_2$ (total composition). The presence of the third stage is deduced from a lower value of the equilibrium constant for tungstates with a lower oxygen content than that of $CaWO_2$. X-ray phase analysis showed that during the first stage the reduction products contain only one phase, $CaWO_{4-x}$, with an undistorted $CaWO_4$ lattice; during the second stage, the reduction

UDC: 541.11

Card 1/2

L 30404-66
ACC NR: AP6008097

products consist of a mixture of the phases $CaWO_{4-x}$, W, and Ca_3WO_6. Values of the partial thermodynamic functions $\Delta\bar{G}_T$, $\Delta\bar{H}$, and $\Delta\bar{S}$ (per mole of O_2) pertaining to the mixture of the phases Ca_3WO_6, W, and $CaWO_{4-x}$ were calculated. The authors are deeply grateful to L.M. Kovbe for assistance in carrying out the x-ray phase analysis.

SUB CODE: 07 / SUBM DATE: 16Jul65 / ORIG REF: 002 / OTH REF: 001

Card 2/2 CC

GEL'BSHTEYN, A.I.; SILINS, M.I.; SHCHEGLOVA, G.G.; VASIL'YEVA, I.S.

Vapor-phase catalytic conversions of acetylene. Part 5: Certain regularities in the catalysis by salts of vapor-phase reactions of addition to acetylene. Kin. i kat. 5 no.3:460-468 My-Je '64. (MIRA 17:11)

1. Fiziko-khimicheskiy institut imeni Karpova.

L 33541-65
ACCESSION NR: AP5009156

S/0114/64/000/011/0001/0006

AUTHOR: Korneyev, M. I. (Candidate of technical sciences); Prutkovskiy, Ye. N. (Engineer); Vasil'yeva, I. F.(Engineer)

TITLE: Characteristics of the starting conditions for a steam-gas installation with a high pressure steam generator of 120 tons per hour and a GT-700-4-1 gas turbine

SOURCE: Energomashinostroyeniye, no. 11, 1964, 1-6

TOPIC TAGS: gas turbine engine, steam auxiliary equipment, high pressure, thermoelectric power plant, thermoelectric generator

ABSTRACT: The first high pressure steam-gas installation in the SSSR with a high pressure steam generator having a capacity of 120 tons per hour is in experimental operation at Leningrad State Power Plant No 1. In April 1964, this installation developed a total power of 39 Mw. Following are the fundamental calculated parameters and those attained during the first tests:

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ACCESSION NR: AP5009156

	Calculated	Actual
Ambient Temperature, °C	+15	-2
Heat value of the natural gas, kcal/norm. m³	8500	7540
Steam pressure after the high pressure steam generator, abs. at.	100	98
Temperature of superheated steam, °C	540	543
Steam capacity of the high pressure steam generator, Tons/hour	120	128
Temperature of the outgoing gas, °C	120	120
Water temperature after high pressure heating, °C	190	not included
Steam flow through the high speed condensor, t/hr	---	10
Temperature of the gas before the gas turbine, °C	700	585
Power, kw:		
Gas turbine generator	4570	3350
High pressure steam generator	12000	11650
Low pressure steam generator	21400	24650
Expended for internal necessities	1323	1323
Net power	36647	38327
Net efficiency of the installation, %	34.9	32.2

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L 33541-65
ACCESSION NR: AP5009156

An analysis of the first tests on the installation show that the equipment is reliable. There is an increase in starting time which is connected with the starting characteristics of the gas turbine installation. The installation has a greater flexibility than steam turbine units of equal power and with identical steam parameters and yields a 50% saving in fuel for each start. It is advisable to use special starting engines for the steam-gas installation which assure maximum starting speeds. As a rule, the power of these special engines should be higher than the power of the gas turbine starters and is determined by the necessary starting time. Steam-gas installations which are made up of gas turbine units with a split shaft and a single-shaft gas turbine should have an additional combustion chamber which assures a reliable start and economic operation of the installations under all conditions. If there is no additional chamber, it is necessary to control the gas temperature by airflow around the high pressure steam generator. This type of control also facilitates synchronization of the electric generator. Orig. art. has:2 tables, 1 figure, and 7 graphs.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: IE

NO REF SOV: 008 OTHER: 000 JPRS

Card3/3

L 31223-66 EWT(m)/ETC(f)/T/EWP(t) IJP(c) JD/WW/JG/DS
ACC NR: AP6022814 SOURCE CODE: UR/0364/66/002/004/0433/0437

AUTHOR: Vasil'yeva, I. G.; Zebreva, A. I.

ORG: Kazakh State University im. S. M. Kirov, Alma-Ata (Kazakhskiy gosudarstvennyy universitet)

TITLE: Electrochemical properties of a gallium electrode: the copper-cadmium-gallium system

SOURCE: Elektrokhimiya, v. 2, no. 4, 1966, 433-437

TOPIC TAGS: electrochemistry, electrode, gallium, copper, cadmium, cathode, anodization, depolarization, electric effect, liquid metal, intermetallic compound

ABSTRACT: The authors studied the behavior of copper, cadmium and a copper-cadmium solution on solid and liquid gallium electrodes. No mutual effect of the elements was observed at a copper concentration of $2 \cdot 10^{-4}$ mol/l either in the cathode or the anode process. The copper-cadmium compound is apparently completely dissociated when dissolved in liquid gallium, as is the case in mercury. An intermetallic copper-cadmium compound is formed on the surface of both solid and liquid gallium at high copper concentrations (since copper is precipitated even on the liquid gallium surface). The formation of this compound is revealed in the cathode process by depolarization of cadmium, and in the anode process by distortion or complete disappearance of the anodization peak for cadmium in the presence of copper. Orig. art. has: 7 figures and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 15Feb65 / ORIG REF: 017 / OTH REF: 011
UDC: 541.13

Card 1/1 BLG

0915 0794

ROMANOVA, L.N., KRAVCHENKO, A.T.; VASIL'YEVA, I.G.

Pathogenesis of allergic complications induced by viruses. Report No.1: Development of infection in mice following repeated injection of sublethal doses of the fixed rabies virus. Vop. virus. 10 no.4:430-435 Jl-Ag '65.

(MIRA 18:8)

1. Gosudarstvennyy kontrol'nyy institut meditsinskikh biologicheskikh preparatov imeni L.A. Tarasevicha, Moskva.

PERSHINA, Z.G.; VASIL'YEVA, I.G.; SOBOLEV, S.M.

Changes in the properties of bacteria of the enteric group under the effect of radioactive phosphorus P^{32}. Zhur. mikrobiol., epid. i immun. 42 no.8:142-143 Ag '65. (MIRA 18:9)

1. Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

MELIKOVA, Ye.N.; VASIL'YEVA, I.G.

Selection method according to immunogenic properties and their significance in increasing the immunogenic activity of dysentery cultures. Zhur. mikrobiol., epid. i immun. 33 no.1:12-17 Ja '62. (MIRA 15:3)

1. Iz Gosudarstvennogo kontrol'nogo instituta meditsinskikh biologicheskikh preparatov imeni Tarasevicha.
(SHIGELLA DYSENTERIAE)
(IMMUNOLOGY)

PERSHINA, Z. G.; VASIL'YEVA, I. G.

Combined effect of irradiation and antibacterial substances on bacteria. Zhur. mikrobiol., epid. i immun. 32 no.8:132-137 Ag '61. (MIRA 15:7)

1. Iz otdela radiatsionnoy mikrobiologii i immunologii Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

(SHIGELLA) (RADIATION--PHYSIOLOGICAL EFFECT) (ANTISEPTICS)

PERSHINA, Z.G.; VASIL'YEVA, I.G.

Study of the morphology of dysentery bacteria in the electron microscope; on the cilia of microbial cells. Zhur. mikrobiol. epid. i immun. 31 no.3:14-17 Mr '60. (MIRA 14:6)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

(SHIGELLA PARADYSENTERIAE)

KAS'YANOV, I.S., kand.biol. nauk; SVIRIDOV, N.K., kand. biol. nauk; ZUYKOVA, Ye.A., prof.; VASIL'yeva, I.G. (Moskva)

Clinicohematological and morphological changes in a combination of lesions treated with a rapidly congealing plastic mass. Vrach. delo no.9:84-88 S '63. (MIRA 16:6)

1. Kliniko-eksperimental'naya laboratoriya po aprobatsii novykh radioaktivnykh preparatov (zav. - prof. V.V.Alpatov) nauchno-issledovatel'skogo rentgenoradiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR.
(BURNS AND SCALDS) (PLASTICS IN SURGERY)
(RADIATION SICKNESS)

KAS'YANOV, I.S., kand.biol. nauk; SVIRIDOV, N.K., kand. biol. nauk; ZUYKOVA, Ye.A., prof.; VASIL'yeva, I.G. (Moskva)

Clinicohematological and morphological changes in a combination of lesions treated with a rapidly congealing plastic mass. Vrach. delo no.9:84-88 S '58. (MIRA 16:6)

1. Kliniko-eksperimental'naya laboratoriya po aprobatsii novykh radioaktivnykh preparatov (zav. - prof. V.V.Alpatov) nauchno-issledovatel'skogo rentgenoradiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR.
(BURNS AND SCALDS) (PLASTICS IN SURGERY)
(RADIATION SICKNESS)

VASIL'YEVA, I.G.; ZEBREVA, A.I.

Electrochemical properties of a gallium electrode. Part 1.
Zhur. fiz. khim. 38 no.7:1774-1778 Jl '64. (MIRA 18:3)

1. Kazakhskiy gosudarstvennyy universitet.

MELIKOVA, Ye.N.; VASIL'YEVA, I.G.; LESNYAK, S.V.

Comparative characteristics of methodologies used in the laboratory evaluation of the effectiveness of World Health Organization's dry typhoid fever vaccine. Zhur.mikrobiol., epid. i immun. 42 no.3:58-65 Mr '65. (MIRA 18:6)

1. Gosudarstvennyy kontrol'nyy institut meditsinskikh biologicheskikh preparatov imeni Tarasevicha.

PERSHINA, Z.G.; VASIL'YEVA, I.G.

Effect of small doses of ultraviolet rays on the variability of Flexner's bacilli. Zhur.mikrobiol.epid.i immun. 31 no.11:99-103 N '60. (MIRA 14:6)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

(SHIGELLA PARADYSENTERIAE)
(ULTRAVIOLET RAYS--PHYSIOLOGICAL EFFECT)

VASIL'YEVA, I.G.

Preparation of dry acetone and alcoholic enteric tetravaccines based upon aerated cultures. Zhur. mikrobiol. epid i immun. 31 no.6:87-91 Je '60. (MIRA 13:8)

1. Iz Instituta epidemiologii i mikrobiologii im. Gamalei AMN SSSR.
(VACCINES)

VASIL'YEVA, I.G., Cand Med Sci—(diss) "Comparative study in an experiment of the effectiveness of various types of typhoid fever vaccines." Los, 1953. 8 pp (Acad Med Sci USSR. Inst of Epidemiology and Microbiology im Gamaleya), 200 copies (KL,45-53, 151)

MALAKHOV, V.V.; YASIL'YEVA, I.G.; SAVICHEV, Ye.I.; GOLOVIN, Ye.I.; GLOTKO, Ye.D.

Determination of the forms in which selenium compounds exist in the dusts and sublimates of lead production. Zav.lab. 26 no.9: 1060-1064 '60. (MIRA 13:9)

1. Leninogorskiy polimetallicheskiy kombinat.
(Selenium--Analysis) (Lead)